the earthy matter alone. This gives support to the idea that the formation of osseous tissue is the result of a chemical combination between the organic matter and the phosphate of lime M. A. Milne-Edwards has also endeavoured to determine whether other inorganic matter, as iron, manganese, and magnesia, can be substituted for lime in bone. It is well known that various mineral substances can be made to enter into the composition of the shell of the egg; but in bone this substitution, M. Milne-Edwards finds, cannot be effected. He explains this difference on the grounds that the phosphates of iron, manganese, and magnesia are not isomorphous with the phospate of lime, and therefore cannot be substituted for it; while in the egg-shell, various isomorphous carbonates may be substituted for that of lime. Moreover, he regards the shell of the egg as in fact an excrementitious substance, and hence as capable of taking up foreign and even injurious matters for the purpose of expulsion.—*Moniteur des Sciences Méd. et Pharm.*, July 2, 1861.

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4. *Researches on the Changes undergone by Cane Sugar in the Intestinal Canal.*—Dr. KŒBNER has investigated this subject, and the following are his conclusions: 1. Cane sugar undergoes no change when left from two to four days, at 104° Fah., in natural gastric juice obtained from a dog. 2. Neither is cane transformed into grape sugar in the living stomach. 3. Lactic acid may, after a time, be detected in a mixture of cane sugar, by means of bile which has been freed from mucus. 4. In the ileum cane is transformed into fruit sugar, at least the presence of the latter can be detected in the ileum by means of the polarizing apparatus. 5. Sugar is largely absorbed by the stomach, duodenum, and small intestines. 6. Cane sugar is partly transformed in the latter into lactic acid and fruit sugar, 7. In dogs and rabbits cane sugar occasionally passes unchanged from the intestines into the portal blood, and this is probably the reason why dogs fed on sugar excrete a smaller quantity of urea. 8. Cane sugar, even when eaten in quantity (by dogs), does not reappear in the urine; but, after a saccharine diet, the amount of uric acid appears to be increased.—*N. Syd. Soc. Year Book*, 1860.

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5. *On the Formation of Sugar and Amyloid Substance in the Animal Economy.*—Dr. R. McDONNELL puts the question—Is the liver endowed with the power of converting amyloid substance into sugar during life, and health? In order to elucidate this question, he withdrew, by means of a catheter, blood from the right side of the heart in the living animal, and the results were—

1st. In twelve experiments made on dogs, for some weeks before fed exclusively on meat, traces of sugar were found in the blood in five; there was no sugar found in the blood of the remaining seven.

2d. In four rabbits, fed on boiled eggs, meat, and butter, for some days, no sugar was detected in the blood drawn from the right side of the heart.

3d. In three dogs, fed on mixed diet, and three rabbits, fed on carrots, potatoes, &c., sugar was found in the blood of the right side of the heart, and in equal quantity in blood from the carotid.

4th. In three rabbits, fed on vegetables, sugar was found in the blood withdrawn during life from the right side of the heart; but double, and in one instance more than treble, the amount was found in the blood removed from the same locality after the animals were killed.

Hence, says McDonnell, one seems in some degree justified in concluding that in vegetable-eating animals the blood is normally saccharine; but that the liver does not form and pour out into the blood of the hepatic vessels sugar specially derived from the transformation of the amyloid substance.—*Ibid.*, from *Dublin Hosp. Gaz.*, May 15.

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6. *Sucking Apparatus of Infants.*—Some time ago, Messrs. CHARLES ROBIN and MAGITOT brought the results of their researches on the mucous membrane of the gums in the fœtus and newly-born infants, before the Société de Biologie; and the following are a few of the most important particulars regarding the sucking apparatus of infants: On the dental cartilage of both jaws there exists, in the region of the canine teeth, a membranous protuberance, which is most

conspicuous in the lower jaw, and sometimes entirely wanting in the upper. This prominence, which disappears three or four months after birth, shows the following peculiarities: It has a slight impression in the centre, and on microscopic examination, two or three papillar prominences may be distinguished, which are very vascular, and thereby capable of erection. The protuberance on the right side of the lower jaw is generally connected with that on the left, by a membranous seam, which is also furnished with papillæ, and very vascular. The edge of the lower jaw, therefore, possesses, as it were, a thin and small lip, extending from one canine tooth to the other, and evidently serving the purpose of sucking.

In some individuals this membranous fold is very thick, but it is always movable forwards as well as backwards. In such instances the prominences are replaced by the ends of the fold itself being larger; so that it resembles a soft and almost œdematous tubercle of oval form. Similar tubercles, only less broad and prominent, exist on the upper jaw. If the surface of the membranous fold is closely examined, it appears to be slightly wrinkled: which is due to the rather voluminous papillæ with which it is furnished; these are rounded above, and covered by a delicate layer of epithelium cells, like the rest of the gums; through which the top of the papillæ are distinctly visible. The reddish colour of this membrane may be easily distinguished from the whitish appearance of the fibrous tissue in the mucous membrane of the gums, which is covered by it; and where it passed into the gums, wrinkles are no longer visible. The prominences described above are sometimes wanting, but the membrane itself is always present; and ends either at the canine teeth, or a little beyond them.—*Med. Times and Gazette,* Nov. 30, 1861.

MATERIA MEDICA AND PHARMACY.

7. *Physiological Action of Aniline.* By Dr. Jas. Turnbull, of Liverpool. —As we know that the alkaloids and their salts are almost identical in their effects, we can scarcely doubt that the physiological action of aniline and that of the sulphate are the same, or very nearly so. Gmelin states that half a gramme of aniline introduced, together with a gramme and a half of water, into the stomach of a rabbit, caused strong clonic cramps, then laborious breathing, loss of strength, dilated pupils, and inflammation of the mucous membrane of the mouth.

Dr. Schuchardt[1] arrived at the following results from a series of experiments: Aniline may act injuriously on the animal organism, and in large doses may even cause death. Frogs introduced into a weak solution containing aniline died in periods varying from a quarter of an hour to two hours and a half, and death was also caused by the introduction of aniline into the mouth or into a wound in the back. Rabbits were also poisoned by this substance, a small animal being killed by fifty drops in six hours and a quarter, and a larger one by a hundred drops in four hours. In all the animals experimented upon, violent clonic and tonic spasms ensued after the application of the aniline, and continued almost uninterruptedly till death. There was also loss of sensibility, commencing at the lower extremities and extending to the upper; the temperature of the body was also reduced. Wherever the aniline was applied locally, as in a wound of the back, on the stomach, on the posterior part of the tongue, or on the conjunctiva, appearances of irritation were observed, which are probably connected with the power possessed by aniline of coagulating albumen. The aniline was never detected in the urine, and it is probable that this substance is eliminated from the body rather by the organs of respiration than by the kidneys.

I gave to a dog about three months old half a drachm of the sulphate of aniline, and the effects produced corresponded in many respects with those observed

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[1] British and Foreign Medico-Chirurgical Review, July, 1861, p. 247.